SPONSORED BY THE

Federal Ministry of Education and Research

MONID | MODELING NETWORK for Severe Infectious Diseases

MONID Summer School

Agent-based Modeling for Spread of Infectious Diseases – Basics, Challenges and Best Practices

September 23-27, 2024 in Halle (Saale)

COURSE SCOPE

Agent-based modeling (ABM) is a powerful computational approach used for simulating the spread of infectious diseases by modeling interactions among agents, usually individual persons within a population. This method is particularly useful for exploring complex scenarios in heterogeneous population and assessing the effectiveness of public health interventions, providing valuable insights for disease control and management.

We will outline the key concepts of agent-based modeling in the context of infectious diseases, highlight challenges including synthetic population building and data acquisition, explain the modeling of (non-pharmaceutical) interventions, and discuss how to make large models fast.

The course will be offered by lecturers from the MONID network and other external partners.

WHO SHOULD PARTICIPATE?

The course is designed for postgraduate students and scientists interested in agent-based modeling with basic knowledge in infectious disease modeling. The course is free of charge. Accommodation are not provided and must be booked and paid by the participants themselves.

The **COURSE LANGUAGE** will be English.

The course will be held on-site (maximum: 20 people, MONID members will be given priority).

COURSE OBJECTIVES

- To provide an understanding of the fundamental principles and theory behind ABM
- To explore techniques for constructing realistic synthetic populations
- To provide an understanding of disease transmission dynamics and contact networks within ABMs
- To provide insights into modeling disease interventions

MAIN TOPICS COVERED WILL INCLUDE

- Introduction to ABM
- Building a synthetic population
- Transmission dynamics and contact networks in ABM
- Calibration and validation of ABMs
- Modeling interventions
- Parallelization techniques for ABMs

SOFTWARE

We will use R, and prior basic knowledge is needed. Please bring your laptop with R installed and R Studio or a similar interface for R.

WHERE WILL IT TAKE PLACE?

Martin Luther University Halle-Wittenberg
PULS/Active Learning Space at the Language Centre
August-Bebel-Straße 13c, 06108 Halle

REGISTRATION DEADLINE: 15/08/2024

REGISTRATION: here

https://monid.net
Twitter / X: @Modeling_MONID

Any questions?
Contact us at modellierungsnetz@medizin.uni-halle.de